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[Document Name]Description

[Title of the Invention]A mortar layer exfoliation exfoliation prevention repair wall, its repair construction method, and an anchor pin

[Claim(s)]

[Claim 1]A long hole which crossed and drilled a crevice produced on a boundary of a concrete main part and a mortar layer and its crevice is filled with epoxy resin system pouring material, A mortar layer exfoliation exfoliation prevention repair wall, wherein an anchor pin currently absorbed in this long hole at epoxy resin system pouring material has moored a mortar layer to a concrete main part by engaging the head board with a mortar layer.

[Claim 2]A long hole which crossed and drilled a crevice produced on a boundary of a concrete main part and a mortar layer and its crevice is filled with epoxy resin system pouring material, While an anchor pin currently absorbed in epoxy resin system pouring material in this long hole is laying a brim of the end underground into epoxy resin system pouring material in a portion located in a concrete main part of the above-mentioned long hole, [an anchor pin] A mortar layer exfoliation exfoliation prevention repair wall having moored a mortar layer to a concrete main part by engaging a head board of the other end with a wide mouth concave part of a portion located in a mortar layer of the above-mentioned long hole.

[Claim 3] A repair construction method of a mortar layer exfoliation exfoliation prevention repair wall characterized by comprising the following.

[a part which has produced a crevice on a boundary of a concrete main part and a mortar layer] A process of forming a wide mouth concave part in an outer edge of a portion which drills two or more long holes made into length which reaches the necessary depth of a concrete main part while crossing a crevice from the mortar layer at the necessary intervals, and is located in a mortar layer of each long hole.

A process which makes the above-mentioned wide mouth concave part carry out the engaging-of-clutch position of the head board of the other end while inserting an anchor pin at the long hole and carrying out closet burial of the brim into epoxy resin system pouring material, after carrying out requirements pouring of the epoxy resin system pouring material at a portion located in a concrete main part of the above-mentioned long hole.

A process pours in epoxy resin system pouring material through a pouring hole of a head board of the anchor pin, and this is made full [process] of the above-mentioned crevice and a long hole after fixed support of the above-mentioned anchor pin is firmly carried out into a long hole by the above-mentioned epoxy resin system pouring material's hardening, and laying a brim underground into it.

[Claim 4] Before being after drilling the above-mentioned long hole and pouring in the 1st epoxy resin system pouring material, A repair construction method of the mortar layer exfoliation exfoliation prevention repair wall according to claim 3 carrying out removal cleaning of **** powder or the dust by using an inhalation circulating nozzle which this long hole was connected to a proper vacuum device, and equipped with a brush at a tip, or spraying compressed air by a blower etc.

[Claim 5] An anchor pin for mortar layer exfoliation exfoliation prevention repair walls which equips one end of **** with a brim, equips the other end with a head board, drills a pouring hole in the head board, and is characterized by things.

[Claim 6] An anchor pin for mortar layer exfoliation exfoliation prevention repair walls which equips one end of **** with a brim, equips the other end with a head board, drills a pouring hole and a check hole in the head board, and is characterized by things.

[Claim 7] The anchor pin for mortar layer exfoliation exfoliation prevention repair walls according to claim 5 or

6 which **** engraves a screw on a peripheral surface and is characterized by things.

[Claim 8]The anchor pin for mortar layer exfoliation exfoliation prevention repair walls according to claim 5, 6, or 7, wherein a head board is circular, mountain shape, or a cross shape.

[Detailed Description of the Invention]

[0001]

[Industrial Application]In this invention, the mortar layer applied to the concrete main part again as the mortar layer which the concrete main part of the building was made to and applied for the exterior, or a ground of sticking a tile loses touch with an interface with a concrete main part, and expands the crevice produced there to ****.

Therefore, it is related with improvement of the mortar layer exfoliation exfoliation prevention repair wall which prevented becoming the situation of exfoliating and making this mortar layer exfoliating, finally, its repair construction method, and an anchor pin.

[0002]

[Description of the Prior Art]It is guessed that the above-mentioned crevice between the interfaces of the concrete main part of a building and a mortar layer originates in the modification stress which a mortar layer repeats humidity, dryness and expansion, and contraction, and produces by a climate condition or frost damages, such as change of the outside temperature depended on sunshine and a rainstorm.

[0003]in order to prevent the situation of exfoliation exfoliation of a mortar layer, without making this crevice expand further -- what is called anchor pinning from the former -- a construction method -- the repair construction method is adopted. It is as follows when it is outlined by drawing 13 and 14. Namely, the long hole 3 of the length which crosses the above-mentioned crevice s to the mortar layer 1 and the concrete main part 2 of the part which has produced the crevice s in the interface with an electric drill, Inner inner 3'

makes it the length which reaches the necessary depth of the concrete main part 2, and punctures, By a blower etc., compressed air is sprayed, removal cleaning of the **** powder is carried out, and from opening 3" to penetrate, or pour in the epoxy resin system pouring material 4 of hypoviscosity with a necessary perfusion pump, and the long hole 3 and the crevice s which follows this are made full of the mortar layer 1 (drawing 13).

[0004]the anchor pin 5 after that immediately with all the circumferential screws to the long hole 3 -- opening 3", while inserting from a side and locating inner end 5' in inner inner 3', 5 " of outer edges are changed into the state where you made it located in opening 3", it is absorbed in the epoxy resin system pouring material 4, and, moreover, between the opening side of opening 3" and 5 " of outer edges is made up for with the epoxy resin system putty 6 (drawing 14).

[0005]

[Problem to be solved by the invention]However, even if it is the repair wall which was carried out in this way and constructed, the mortar layer 1 advances exfoliation from the concrete main part 2 in fact in many cases. It is accepted to be in the anchor pin 5 engrossed in the epoxy resin system pouring material 4 of the long hole 3 not having played the expected function. Namely, since the anchor pin 5 is with all the circumferential screws, although engagement adhesion is carried out with the epoxy resin system pouring material 4 in the long hole 3 and it is unifying firmly, Only carrying out the devotion position at the epoxy resin system pouring material 4 at the shape of a straight line, to the mortar layer 1 and the concrete main part 2, engaging of clutch or the structure where it gears is not made directly. Therefore, when the power of the direction isolated from the concrete main part 2 in the mortar layer 1 by repetition of the above-mentioned humidity, dryness and expansion, and contraction after repair acts, the anchor pin 5 does not function the mortar layer 1 on the concrete main part 2 that it should moor directly.

[0006]Although pouring of the epoxy resin system pouring material 4 to the crevice s is performed pulling out at hand the pouring nozzle which inserted the discharge tip in inner inner 3' of the long hole 3, generally, When the injection rate to the crevice s becomes superfluous, while extending the crevice s to the circumference on the contrary, there is a problem of carrying out isolation bulge of the mortar layer 1 from the concrete main part 2. There was also a problem that the epoxy resin system putty 6 which made up for the opening side of the long hole 3 which inserted the anchor pin 5 carried out tenebrescence black, and spoiled appearance.

[0007]Then, this invention improves the mooring function to the concrete main part of a mortar layer, and loses the expansion of a crevice and the isolation bulge of a mortar layer by superfluous pouring, and it is going to make it not spoil the appearance after repair further.

[0008]

[Means for solving problem]The epoxy resin system pouring material 17 and 18 is [wall / this invention mortar layer exfoliation exfoliation prevention repair] full of the long hole 12 which crossed and drilled the crevice s produced on the boundary of the concrete main part a and the mortar layer b, and its crevice s, When the anchor pin c currently absorbed in this long hole 12 at the epoxy resin system pouring material 17 and 18 engages the head board 9 with the mortar layer b, the mortar layer b is moored to the concrete main part a.

[0009]While laying the brim 8 of the end of the anchor pin c underground into the epoxy resin system pouring material 17 as the above-mentioned engaging-of-clutch mooring structure in the portion located in the concrete main part a of the above-mentioned long hole 12, It is preferred to have changed the head board 9 of the other end into the state where it engaged with the wide mouth concave part 13 of the portion located in the mortar layer b of the above-mentioned long hole 12.

[0010]this invention repair construction method consists of the following process. (1), [the part which has produced the crevice s on the boundary of the concrete main part a and the mortar layer b] The process of forming the wide mouth concave part 13 in the outer edge of the portion which drills two or more long holes 12 made into the length which reaches the necessary depth of the concrete main part a while crossing the crevice s from the mortar layer b at the necessary intervals, and is located in the mortar layer b of each long hole 12. (2) After carrying out requirements pouring of the epoxy resin system pouring material 17 at the portion located in the concrete main part a of the above-mentioned long hole 12, while inserting the anchor pin c in the long hole 12 and carrying out closet burial of the brim 8 into the epoxy resin system pouring material 17, The process which makes the above-mentioned wide mouth concave part 13 carry out the engaging-of-clutch position of the head board 9 of the other end. (3), [by the above-mentioned epoxy resin system pouring material's 17 hardening, and carrying out adhesion fixation of the brim 8 into it] The process pours in the epoxy resin system pouring material 18 through the pouring hole 10 of the head board 9 of the

anchor pin c, and this is made full [process] of the crevice s and the long hole 12 after fixed support of the above-mentioned anchor pin c is firmly carried out into the long hole 12.

[0011]Before being after drilling the long hole 12 in the above and pouring in the epoxy resin system pouring material 17, It is appropriate to carry out removal cleaning of **** powder or the dust by using the inhalation circulating nozzle 15 which this long hole 12 was connected to the proper vacuum device, and equipped with the brush 14 at the tip, or spraying compressed air by a blower etc.

[0012]One end of **** 7 is equipped with the brim 8, it equips the other end with the head board 9, and the anchor pin c for this invention mortar layer exfoliation exfoliation prevention repair walls drills the pouring hole 10 in the head board 9. If the check hole 11 is further drilled in the head board 9, while being able to check the injection rate of the epoxy resin system pouring material 17 and 18, exhaust air is also possible and it is highly convenient. Since what is called a spiral rod that there are a round bar-like thing, a thing which engraved the screw on the peripheral surface, etc. as **** 7, and engraves especially a screw makes frictional resistance large, it is effective. A proper-shaped thing can be used for the head board 9 according to use parts, such as circular, mountain shape, or a cross shape.

[0013]

[Function]In [since the mooring function to the concrete main part of the mortar layer by an anchor pin is improved according to this invention repair wall] after repair, there is nothing on which the power of the direction isolated from a concrete main part in a mortar layer by repetition of humidity, dryness and expansion, and contraction acted and that the mortar layer does for exfoliation exfoliation even if it carries out.

[0014]According to this invention repair construction method, [pouring of the epoxy resin system pouring material to a crevice and a long hole] Since pouring of a suitable quantity can be ensured checking the blow-off condition of pouring material by a check hole conjointly with carrying out after considering it as the structure which moors a mortar layer to a concrete main part with an anchor pin, superfluous pouring -- a crevice is extended to the circumference and there is no possibility of carrying out isolation bulge of the mortar layer from a concrete main part.

[0015]The anchor pin for this invention mortar layer exfoliation exfoliation prevention repair walls is effective for improving the mooring function to the concrete main part of a mortar layer.

[0016]

[Working example]Below, the wall which finished the embodiment of this invention with the concrete main part a of the building with reference to drawing 1, and 2, 5-10, and has produced the crevice s between the mortar layers b for the exterior is explained.

[0017]c is an anchor pin used in this embodiment.

It equips with the head board 9 of a large round shape one end of **** 7 which engraved the screw on all the circumferences for the brim 8 of a small circle form at the other end, and drills the pouring hole 10 and the check hole 11 in the head board 9 (drawing 1, 2).

Although the thing of the shape of a round bar which is not engraving the screw may be sufficient as this anchor pin c and the size of each part is determined according to the size of the after-mentioned length hole 12 drilled in the wall concerned, The anchor pin c of this example shall be 53 mm in full length, and sets each diameter of **** 7, the brim 8, and the head board 9 to 4 mm, 6 mm, and 14 mm, respectively, and is setting thickness of the brim 8 and the head board 9 to 2 mm and 3 mm, respectively.

[0018]In repair construction, it is first made the depth which crosses the crevice s from the mortar layer b in the wall of the part which has produced the crevice s (drawing 5), and extends two or more long holes 12 about 7.2 mm in diameter by 50-60 mm in the concrete main part a at it, It punctures in all directions at intervals of a necessary interval, for example, 250 mm. Namely, inner inner 12' of the length which this long hole 12 follows the crevice s, and moreover reaches the necessary depth (the 50-60 above-mentioned mm) of the concrete main part a, While consisting of opening 12" which similarly penetrates the mortar layer b moreover succeeding the crevice s, The wide mouth concave part 13 is formed in the outer edge of the opening 12", and it enables it to have inserted like the after-mentioned, where the anchor pin c located the brim 8 of the one end in inner inner 12' and the head board 9 of the other end is meshed to the wide mouth concave part 13.

[0019]The external surface of a wall is punctured right-angled, i.e., horizontally, like illustration, and also the

long hole 12 is made to incline so that an inner inner 12' side may descend, and may be drilled aslant.

[0020]Although drilling of the long hole 12 is performed using an electric drill, The shaving waste then produced, i.e., **** powder, and dust insert in the long hole 12 the inhalation circulating nozzle 15 which was connected to vacuum devices, such as a vacuum cleaner, and equipped with the brush 14 at the tip (drawing 6), or by a blower etc., spray compressed air and carry out removal cleaning again.

[0021]Next, the nozzle 16 for pouring linked to a necessary perfusion pump is inserted until the tip reaches the deepest portion of inner inner 12' of the long hole 12, and liquefied or the epoxy resin system pouring material 17 of hypoviscosity is poured in till the place of about 1/3 of the full length of the long hole 12, pulling it out at hand (drawing 7). Then, while inserting the above-mentioned anchor pin c in the long hole 12 and carrying out closet burial of the brim 8 of the one end into the above-mentioned epoxy resin system pouring material 17 of inner inner 12', the wide mouth concave part 13 is made to carry out the fitting position of the head board 9 of the other end (drawing 8).

[0022][then by fixing the brim 8 in it, while the above-mentioned epoxy resin system pouring material 17 hardens and adhering to the inside of inner inner 12'] The nozzle for pouring which chose that adhesion fixed support of the anchor pin c was firmly carried out into the long hole 12 at its own discretion, next connected with the same necessary perfusion pump is connected to the pouring hole 10 of the head board 9 of the anchor pin c, It is the same and, or pouring of the epoxy resin system pouring material 18 of hypoviscosity is continued, and the crevice s and the long hole 12 are made filled with this.

[0023][as the above-mentioned epoxy resin system pouring material 17 first poured in in this example in order to carry out fixed support of the anchor pin c] in order to use the thing of the quick-drying type hardened in 30 to 120 minutes in normal temperature (18-20 **) and to make the crevice s and the long hole 12 filled, similarly it hardens in normal temperature in 6 to 24 hours as the above-mentioned epoxy resin system pouring material 18 poured into the 2nd time -- the thing of the type was usually used. However, as these epoxy resin system pouring material 17 and 18, either the thing of the above-mentioned quick-drying type or a common type thing may be used. It is necessary to determine suitably of what kind of cure time it is concretely made a thing by above-mentioned each within the limits according to the situation of the spot according to a custom.

[0024]By the way, in pouring of the 2nd epoxy resin system pouring material 18, The air in the crevice s and the long hole 12 is discharged through the check hole 11 of the head board 9, By seeing the blow-off condition of the pouring material 18 from the check hole 11, it checks whether the pouring material 18 has been full, and a proper quantity of pourings are ensured, the work concerned can be completed, and, thereby, the expected mortar layer exfoliation exfoliation prevention repair wall A carries out construction completion (drawing 9, 10).

[0025]That is, by going through predetermined time, and the epoxy resin system pouring material's 18 hardening, and revealing the predetermined characteristic, via this epoxy resin system pouring material 18, the mortar layer b and the concrete main part a which had come floating via the crevice s paste up firmly, and, according to this repair wall A, unify.

[0026]And while the anchor pin c in the long hole 12 carries out burial adherence into the above-mentioned epoxy resin system pouring material 17 in inner inner 12' which is excavating the brim 8 of the end to the concrete main part a, Since it has structure which is located in the wide mouth concave part 13 of opening 12" currently formed in the mortar layer b in the head board 9 of the other end, and moors this mortar layer b to the concrete main part a directly, Even if the power of the direction which the mortar layer b repeats humidity, dryness and expansion, and contraction according to a weather situation etc., and isolates from the concrete main part a in the mortar layer b acts since then, There is no possibility of causing the situation of exfoliating and making the mortar layer b exfoliating so that the firm adhesion by the above-mentioned epoxy resin system pouring material 18 may be destroyed, the interface may newly be floated and a crevice may not be produced there therefore.

[0027][pouring of the epoxy resin system pouring material 18 to the above-mentioned crevice s and the long hole 12] As mentioned above, with carrying out, after considering it as the structure which moors the mortar layer b to the concrete main part a with the anchor pin c conjointly, since pouring of a suitable quantity can be ensured checking the blow-off condition of the pouring material 18 by the check hole 11 -- superfluous pouring -- the crevice s is extended to the circumference and there is no possibility of carrying out isolation bulge of the mortar layer b from the concrete main part a.

[0028]Drawing 3 and 4 show other embodiments of an anchor pin, the anchor pin c of said embodiment only differs in these drawing 3, anchor pin c' of 4, and c " of the head board 9' and the shape of 9 ", and other composition is substantially the same. That is, head board 9of anchor pin c' ' is mountain shape mostly, and

head board 9 of anchor pin c'' is about 10 type. A pouring hole, 11', and 11 '' (7' and 7 '') (a brim, 10', and 10 '') of a spiral rod, 8', and 8 '' are check holes. As these anchor pin c' and c '' of ground mortar layers are applied to the concrete main part of a building and it is shown in drawing 11 and 12, Insertion use being carried out like said embodiment, and constructing the expected mortar layer exfoliation exfoliation prevention repair wall B and B' to cross shape partial 20' of the tile 19 stuck on it, T type portion 20 of the two-dish credit tile horse masonry joint by 19', or a potato masonry joint, is presented.

[0029]

[Effect of the Invention]According to this invention, the following effect is generated so that clearly from the place described above.

[0030]Namely, in [according to this invention repair wall, the mooring function to the concrete main part of the mortar layer by an anchor pin is improved, therefore] after repair, there is nothing to which the power of the direction isolated from a concrete main part acted on the mortar layer by repetition of humidity, dryness and expansion, and contraction and that the mortar layer does for exfoliation exfoliation even if it carries out.

[0031]According to this invention repair construction method, pouring of the epoxy resin system pouring material to a crevice and a long hole is performed after considering it as the structure which moors a mortar layer to a concrete main part with an anchor pin.

and -- since pouring of a suitable quantity can be ensured checking the blow-off condition of pouring material by a check hole -- superfluous pouring -- a crevice is extended on the contrary to the circumference, and isolation bulge of the mortar layer is not carried out from a concrete main part.

[0032]this invention anchor pin is effective for improving the mooring function to the concrete main part of a mortar layer.

[Brief Description of the Drawings]

[Drawing 1]It is a side view showing one embodiment of the anchor pin for this invention mortar layer exfoliation exfoliation prevention repair walls.

[Drawing 2]It is a front view same as the above.

[Drawing 3]It is a front view of other embodiments of this invention anchor pin.

[Drawing 4]It is a front view of the embodiment of further others of this invention anchor pin.

[Drawing 5]It is a sectional view in the state where the long hole was dug to the part concerned of the wall which made the concrete main part in this invention repair construction method, and applied the mortar layer.

[Drawing 6]It is a sectional view in the state where removal cleaning of the ** powder etc. which go away in a long hole same as the above is carried out.

[Drawing 7]It is a sectional view in the state where epoxy resin system pouring material is injected into the portion located in the concrete main part of a long hole same as the above.

[Drawing 8]It is a sectional view in the state where the anchor pin was inserted in the long hole same as the above.

[Drawing 9]It is a sectional view of the becoming this invention repair wall which finished pouring epoxy resin system pouring material into a long hole same as the above and crevice.

[Drawing 10]It is an outside figure same as the above.

[Drawing 11]It is an outside figure of the tile wall which repaired the wall which stuck the tile on the mortar layer for grounds applied to the concrete main part at two-dish credit horse masonry joint type by this invention repair construction method.

[Drawing 12]It is an outside figure of the tile wall which repaired the wall which stuck the tile on the mortar layer for grounds applied to the concrete main part at two-dish credit potato masonry joint type by this invention repair construction method.

[Drawing 13]It is a sectional view immediately after pouring epoxy resin system pouring material into the long hole and crevice which were dug to the part concerned of the wall which shows a publicly known repair construction method conventionally, made the concrete main part, and applied the mortar layer.

[Drawing 14]While inserting an anchor pin in a long hole same as the above, it is a sectional view in the state where filled a gap with epoxy resin system putty, and repair was finished.

[Explanations of letters or numerals]a Concrete main part b mortar layer c The anchor pin s. Crevice 7 **** 7' **** 7" **** 8 Brim 8'. Brim 8 "brim 9 head board 9' head board 9" head board 10 pouring hole 10' pouring hole 10 "pouring hole 11 check hole 11' check hole 11" check hole 12 length hole 13 wide-mouth concave part 14 brush 15 Inhalation circulating nozzle 17 epoxy-resin system pouring material 18 epoxy-resin system pouring material

[Translation done.]